

**KEYS TO THE FLORA OF FLORIDA: 21,
CRATAEGUS (ROSACEAE)**

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ABSTRACT

Crataegus (Rosaceae) is represented in Florida by 11 species. The name *Crataegus michauxii* is reaffirmed for the Summer Haw; the species is treated as consisting of 2 varieties, with var. *lacrimata* newly ranked. *Crataegus phaenopyrum* is rated as endangered. An amplified key is given to the Florida taxa. *Phytologia* 91(1):18-25, (April, 2009).

KEY WORDS: *Crataegus*, Rosaceae, Florida flora.

"No wonder you ponder my application of names to the Hawthorns. But with so many children of my imagination, and the free use by others in naming their offspring, names with sympathetic tolerance and interpretation with their subjects are much in demand." Chauncey D. Beadle, 2 September 1940, letter to William A. Murrill, in response to Murrill's complaint that species of *Crataegus* had become so numerous that all suitable epithets had already been used.

Crataegus (Rosaceae), the hawthorns, has received its full share of attention from several prolific authors. Their energies have generated impressive, even unmanageable, numbers of specific names. Few perhaps now remember that in J. K. Small's early *Flora of the Southeastern United States* (1903), C. D. Beadle described and named 185 species of *Crataegus*, and that fully 47 of them were from Florida. Some relief was felt when, in Small's revised *Manual of the Southeastern Flora* (1933), Ivar Tidestrom reduced this number of total southeastern species to 33 and the Florida species to 11. Even better -- from the standpoint of persons with finite retentive powers -- R. K.

Godfrey, in his *Trees, Shrubs and Woody Vines* (1988), saw fit to recognize only 9 species in the three-state Southeast, all to be found in Florida.

Even as some writers were winnowing the published names of *Crataegus*, other investigators were adding to the list. T. G. Harbison and W. W. Ashe, operating from the Biltmore Herbarium, North Carolina; E. J. Palmer and C. S. Sargent, with the Arnold Arboretum, Massachusetts; and W. A. Murrill, University of Florida, Gainesville, all found variations in southeastern and Florida hawthorns that they believed merited naming.

But with the passage of years a new champion of the hawthorns had arisen, whose reports again serve to push the number of recognized species ever upward. J. B. Phipps, based at the University of Western Ontario, began to search the continent, to study and collect *Crataegus*, and has now excellently documented, described, mapped and beautifully illustrated most series within the genus. He has skillfully addressed: *C. aestivalis*, *C. opaca*, and *C. rufula* (J. Arnold Arbor. 69: 401-431. 1988); *C. marshallii*, *C. phaenopyrum*, and *C. spathulata* (Ann. Missouri Bot. Gard. 85: 475-491. 1998); and *C. uniflora* (with Dvorsky, Sida 22: 423-445. 2006). He determined Aiton's widely used *C. flava* is not the familiar Summer Haw (Taxon 37: 108-113. 1988). Though he made no reassignment himself, the characteristics and specimens he cited point to it being the Smooth Haw, *C. pulcherrima*, a name of later date. In turn -- though Phipps (below) argues to the contrary -- the Summer Haw *s.l.* now must become *C. michauxii* Persoon. (This name has independently been accepted by R. P. Wunderlin, *Guide to the Vascular Plants of Florida*. 1998.)

The present treatment, however, must take issue with two recent studies by J. B. Phipps & K. A. Dvorsky (J. Bot. Res. Inst. Texas 1: 171-202. 2007; *ibid.* 2: 1101-1162. 2008). In the first of these papers (2007), 13 species described by C. D. Beadle (1902, 1903) and E. J. Palmer (1932) are redescribed, mapped, illustrated, and given new life as species recognized by someone other than their original author.

Eight are reported to occur in Florida (*C. annosa* Beadle, *C. aprica* Beadle, *C. egregia* Beadle, *C. galbana* Beadle, *C. leonensis* Palmer, *C. mira* Beadle, *C. segnis* Beadle, *C. visenda* Beadle). In the second of these papers (2008) a further 26 species are described, fully 20 of them to be found in Florida (*C. alabamensis* Beadle, *C. attrita* Beadle, *C. condigna* Beadle, *C. crocea* Beadle, *C. dispar* Beadle, *C. egens* Beadle, *C. florens* Beadle, *C. floridana* Sarg., *C. furtiva* Beadle, *C. integra* (Nash) Beadle, *C. lacrimata* Small, *C. lanata* Beadle, *C. lancei* J. B. Phipps, *C. lassa* Beadle, *C. lepida* Beadle, *C. meridiana* Beadle, *C. munda* Beadle, *C. quaesita* Beadle, *C. senta* Beadle, *C. vicana* Beadle). [Of these entities, only *C. lacrimata* is recognized here.] Nearly all of these reported species are infrequent to rare, many with very restricted locations or with disjunct ranges extending over wide areas. Though the species are carefully keyed, the distinctions are slight. Phipps & Dvorsky maintain these plants to be different from *C. michauxii* (the Summer Haw, as treated here), the first eight not even in the same series. Though one wishes to acknowledge Phipps' judgments, as merited by the value of his previous studies (above), one cannot but view these "species" as apomictic populations, unworthy of being placed alongside the taxa that elsewhere constitute the genus *Crataegus*. They exactly parallel the many discrete but too finely distinguished agamospermic populations also encountered in *Rubus* (Phytologia 87: 29-39. 2005).

As noted (above), the reassignment of *Crataegus flava* to the hawthorn formerly known as *C. pulcherrima* has left *C. michauxii* Pers. the prior name for the Summer Haw. However Phipps & Dvorsky now reject that name. Their argument (2008: 1102-1103) is based on the claim that Michaux' type (at P) is "simply a piece from a vigorously growing extension shoot of an unidentifiable species." Although Michaux' original name, *C. glandulosa* (1803) was a later homonym (of *C. glandulosa* Georgi, 1776), Persoon (1806) based his *C. michauxii* on the Michaux description and specimen. That specimen (P, fiche 65, image 9) is one of 9 images of *Crataegus*, all collected by Michaux during his decade-long (1785-1796) exploration of eastern North America. It consists of a single slightly zigzag stem bearing 4 long spines and 8 leaves, each with nearly orbicular blades and well-defined

petioles. Numerous glands and minute teeth can be discerned on the lower blade margins. The only label data are the words "*glandulosa*" and "(*varietas?*)," in Michaux' hand. Far from being "unidentifiable," its image very nearly matches the illustration of *C. condigna* Beadle, as shown by Phipps & Dvorsky (2008: 1125). It is certainly a Summer Haw, as commonly understood. The name *Crataegus michauxii* Pers. (1806) remains well-based and prior.

The Florida variability found within *Crataegus michauxii* justifies inclusion under that name of nine synonyms (see the key), all typified by Florida plants -- by Beadle, Palmer, Sargent, and Small. Within this complex the Weeping Haw, *C. lacrimata*, of the Florida panhandle sandhills stands out, both as to substantial but discrete range and adequately distinct morphology (pendent branches, narrowly spatulate leaves). It is at times recognized at specific rank (Small, 1933; Kurz & Godfrey, 1962; Little, 1979).

But there is also a case to be made for leaving *Crataegus lacrimata* submerged within the greater apomictic *C. michauxii* complex. Even in the heart of its Florida panhandle range one can readily find plants -- or more commonly, branchlets within plants -- that are intermediate or seemingly of the second taxon. This phenomenon is not discussed by Phipps, though he twice illustrates it: a specimen labeled *C. lacrimata* (2008: 1113), and a specimen labeled *C. lassa* (2008: 1137). In each, lower leaves are narrow, appropriate to *C. lacrimata*, while the more terminal leaves are broad, readily identifiable as *C. michauxii*. Varietal status, as given here, is an approximate way of acknowledging this curious intermediacy. A new combination is required.

Crataegus michauxii Persoon var. *lacrimata* (Small) D. B. Ward, comb. et stat. nov. Basionym: *Crataegus lacrimata* J. K. Small, Torreyia 1:97. 1901. TYPE: Holotype: United States, Florida, Okaloosa Co., Crestview. C. D. Beadle, Biltmore Herbarium B-17 and B-969, 8 April 1899 (NY). Isotype (cited as lectotype by Phipps & Dvorsky 2008: 1112): C. D. Beadle 17, 8 April 1899 (US).

CRATAEGUS L. Hawthorns *

1. Flowers and fruits solitary, on short (1-3 mm.) pedicels; sepals prominent, persistent in fruit, broad at base, with coarsely serrate margins; leaves glossy green above, elliptic to obovate, with regular crenate teeth on apical half, the lower margins entire; fruits dull brown, 10 mm. dia.; thorns \pm 3 cm. long, slender and gray. Shrub or rarely small tree. Understory in moist woodlands. North Florida (s. to Marion County); frequent. Spring. [*Crataegus croomiana* Sarg.] ONE-FLOWERED HAW. **Crataegus uniflora** Muench.

1. Flowers and fruits in corymbs of several (or if solitary, on long (10-15 mm.) pedicels); sepals not prominent, entire or weakly serrate, often withering in fruit; leaves various.

2. Leaves red-maplelike, with 2 (or 4) sharply pointed lateral lobes; fruits red, 4-5 mm. dia.; thorns 1-2 cm. long. Small tree. Low woodlands. Mid-panhandle (Washington; Wakulla counties: Ochlockonee R.); rare. Spring. ENDANGERED (State listing). [*Crataegus youngii* Sarg.]

WASHINGTON HAW. **Crataegus phaenopyrum** (L.f.) Medic.

2. Leaves not maplelike, unlobed or with irregularly rounded lateral lobes (the apex rounded or acute).

3. All leaves deeply and symmetrically divided, with some sinuses nearly reaching the midrib, the lobes sharply incised; fruits small (5-6 mm. dia.), bright red, solitary or in corymbs of several; thorns nearly lacking. Small tree. Wet floodplain forests, moist wooded slopes. Panhandle and north Florida (s. to Marion County; excl. n.e. Fla.), disjunct to mid-peninsula (Hillsborough County); infrequent and local. Early spring.

PARSLEY HAW.

Crataegus marshallii Egglest.

3. All leaves either unlobed or with irregular shallow lobes.

4. Fruits very small (3-4 mm. dia.), in several-flowered glabrous corymbs; leaves glabrous when mature, spatulate with long-cuneate bases and rounded crenately toothed apices, sometimes with three apical lobes; veins largely (except the lower midrib) immersed in leaf tissue, without sunken axil pockets; thorns nearly lacking. Spindly shrub or small tree. Moist calcareous

wooded slopes, mostly near the Apalachicola R. bluffs (Gadsden, Jackson, Liberty counties); infrequent and local. Spring.

RED HAW.

Crataegus spathulata Michx.

4. Fruits larger (>4 mm. dia.), or if small, with sharply serrate leaves; leaves and inflorescences usually with some hairs; lateral veins protruding above lower leaf surface.

5. Leaves, or at least some, with acute apices; blades elliptic, unlobed or with 2-4 lateral lobes.

6. Fruits medium (4-7 mm. dia.), usually in several-flowered corymbs; lower surface of leaves with small sunken pockets in axils of major veins; thorns few. Small to mid-sized tree. Floodplains, riverbottom forests, swamps. Panhandle and north Florida, south to north peninsula (Marion County); frequent. Early spring. [*Crataegus paludosa* Sarg.]

GREEN HAW.

Crataegus viridis L.

6. Fruits large (6-15 mm. dia.), solitary or usually so (if several together, usually not of the same corymb).

7. Lower surface of leaves with pockets lacking in vein axils; petioles distinct, the blade cuneate at base but not extended downward; leaves usually with 2-4 shallow sharply-serrate lobes; thorns few. Small to mid-size tree. Open woodlands, moist hammocks and slopes. Panhandle, locally eastward (to Alachua, Columbia, Levy counties); frequent. Spring. [*Crataegus opima* Beadle; *Crataegus pulcherrima* Ashe; *Crataegus rober* Beadle]

SMOOTH HAW.

Crataegus flava Ait.

7. Lower surface of leaves with prominent hair-filled sunken pockets in axils of major lateral veins (domatia); leaves unlobed or deeply but irregularly cut or lobed; petioles indistinct, changing gradually into cuneate-based blade.

8. Leaves 3-5 cm. long, serrate or crenate toward apex, glossy above, nearly glabrous below; thorns few. Shrub or small tree. Pond margins, creek banks. Mid-panhandle (Gadsden County), east to northeast Florida (Nassau County), south along east coast (to Volusia County); frequent. Early spring. [*Crataegus luculenta* Sarg.; *Crataegus maloides* Sarg.]

MAY HAW. **Crataegus aestivalis** (Walt.) Torr. & Gray

8. Leaves 5-7 cm. long, entire or finely serrate-crenate toward apex, dull green above, densely rufous-tomentose below when young, persisting along veins when full-grown.

9. Leaves elliptic to broad-elliptic; lateral veins 5-9; pedicels glabrous; fruits 12-15 mm. dia. Small tree. Stream and river banks. Western panhandle (n.e. Escambia County: Century); rare. Spring.
APPLE HAW. **Crataegus opaca** Hook. & Arn.

9. Leaves broad-elliptic to obovate; lateral veins 3-5; pedicels rufous-tomentose; fruits 10-12 mm. dia. Small tree. River bottoms. Central panhandle (Jackson, Gadsden counties); rare. [*Crataegus aestivalis*, misapplied]
RUFIOUS MAY HAW. **Crataegus rufula** Sarg.

5. Leaves with rounded apices, or a few acute; blades oblanceolate to spatulate, without lobes (or some leaves irregularly lobed on vigorous shoots of *C. michauxii*); fruits large (6-12 mm. dia.).

10. Leaves glossy green above, without glands on petioles or margins, without pockets (domatia) in vein axils; thorns usually very prominent (3-4 cm. long). Small tree. Floodplain forests, moist hammocks. North Florida (excl. w. panhandle), south into north peninsula (to Clay, Levy counties); frequent. Spring. [*Crataegus pyracanthoides* Beadle]

COCKSPUR HAW. **Crataegus crus-galli** L.

10. Leaves uniformly light green above and below; petioles and margins with dark button-like glands; lower leaf surface with proximal vein axils sunken and hairy, forming small pockets (domatia); thorns numerous but small (1-2 cm. long). Spring. An apomictic complex, of many named forms, only two of which are here given recognition.
SUMMER HAW, YELLOW HAW.

Crataegus michauxii Pers.

a. Leaves broadly spatulate to obovate; branches variously spreading, not weeping. Shrub or small to mid-sized

tree. Dry to moist woodlands, fencerows, open pastures. North Florida, south to mid-peninsula (Highlands County); common. [*Crataegus audens* Beadle; *Crataegus egregia* Beadle; *Crataegus flava*, misapplied; *Crataegus floridana* Sarg.; *Crataegus galbana* Beadle; *Crataegus leonensis* Palmer; *Crataegus lepida* Beadle; *Crataegus ravenelii* Sarg.; *Crataegus visenda* Beadle] SUMMER HAW (typical). var. **michauxii**

a. Leaves narrowly spatulate (except on vigorous shoots, when sometimes broader); branches and branchlets prominently weeping (pendent). Small tree. Dry sandhills. Western half of panhandle (Escambia to Calhoun counties); infrequent and local. [*Crataegus lacrimata* Small] WEeping HAW. var. **lacrimata** (Small) D. B. Ward

*This paper is a continuation of a series begun in 1977. The "amplified key" format employed here is designed to present in compact form the basic morphological framework of a conventional dichotomous key, as well as data on habitat, range, and frequency. Amplified keys are being prepared for all genera of the Florida vascular flora; the present series is restricted to genera where a new combination is required or a special situation merits extended discussion.